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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,188	12/05/2000	Kazushi Takanashi	33152	7999

116 7590 03/21/2007  
PEARNE & GORDON LLP  
1801 EAST 9TH STREET  
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CLEVELAND, OH 44114-3108

EXAMINER
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ZHENG, EVA Y

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

09/730,188

Applicant(s)

TAKANASHI ET AL.

Examiner

Eva Yi Zheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 6,7,11-13 and 20-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-13,20-22 is/are allowed.
- 6) ☒ Claim(s) 6,7 and 23-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 1/2/07 have been fully considered but they are not persuasive. Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited reference reasonably and properly meet the claimed limitation as rejected.

Applicant's argument – Prior art of Bhatt (US 5,517,213) is not performed while the reception signal is equalized.

Examiner's response – "While the reception signal is equalized" is interpreted as on-going process not done process. Bhatt disclose an equalizer processor (20 in Fig.1) being controlled by coefficient control network (80 in Fig. 1). Each of the blind equalizers (32 taps, 64 taps, 96 taps, and 128 taps) are equalizing the reception signal. In light of the present application, the purpose of the invention is to improve and achieve better equalization performance. If the reception signal is done with equalization, then there's no use of monitor tap coefficient and change tap coefficient arrangement. Therefore, Bhatt perform tap coefficient controls while reception signal is equalized.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 6, 7, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Bhatt et al. (US 5,517,213), further in view of Ushirokawa et al. (US 5,228,058).

a) Regarding to claims 6, 7, and 23-26, AAPA disclose a waveform equalizer comprising:

an equalizing filter unit including a delay circuit with a tap (block 9 and 10 in Fig. 15);

a discriminator which decodes an output signal of said equalizing filter unit (block 5 in Fig. 15);

tap arrangement control means which controls a tap arrangement of said equalizing filter unit (block 8 in Fig. 15; Page 1, L16 - Page 2, L8).

AAPA discloses all of the subject matter as described above except for specifically teaching of (1) a tap coefficient monitoring unit which monitors a tap coefficient of the equalizing filter unit, and changes the tap arrangement of the equalizing filter unit so as to restart a starting step of equalizing steps for equalizing a reception signal. (2) an impulse response device for predicting an impulse response of a transfer path.

For (1), Bhatt et al., in the same field of endeavor, teaches an equalizer processor (20 in Fig.1) being controlled by coefficient control network (80 in Fig. 1), which constitutes tap coefficient monitoring unit (as shown in Fig. 2). It monitors tap coefficients of the adaptive equalizer, and if the coefficients have not converged, then

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the equalization is reinitiated (Col 3, L47-Col 4, L24). By providing a tap coefficient controller to an equalizer processor would optimize and proper operation of tap arrangement. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the coefficient control network processor taught by Bhatt et al. with the waveform equalizer taught by AAPA. By doing so, the waveform equalizer has better performance while transfer path varies and improve multipath fading problems.

For (2), Ushirokawa et al, in the same field of endeavor, teaches an adaptive equalizer system (Fig.1). The impulse response estimator is determined based on the received signal and the output of the equalizer (Col 1, L33-41 and Col 6, L28-31). Therefore, it is obvious to one of ordinary skill in art to implement the impulse response estimator from Ushirokawa et al in the waveform equalizer of AAPA. By doing so, accurately updates tap coefficients of equalizer without regard to intersymbol interference conditions.

#### ***Allowable Subject Matter***

4. Claims 11-13 and 20-22 are allowed.
5. The following is an examiner's statement of reasons for allowance:

None of the prior art teaches or suggests a waveform equalizer comprises a detector means for detecting a moving speed of the mobile station with a threshold value; tap arrangement is changed when the moving speed is higher than the threshold hold.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

**6. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Y Zheng whose telephone number is 571-272-3049. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eva Yi Zheng  
Examiner  
Art Unit 2611

March 14, 2007

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER